

Autistic traits, mental health, and social media

B103674

Word Count: 4687

MSc Psychological Research

The University of Edinburgh

2017

Abstract

Individuals with high scores in the Autism Spectrum Quotient (AQ), whether or not they have diagnosed Autism spectrum conditions (ASC), tend to have difficulty interacting with others (Baron-Cohen, Wheelwright, Skinner, Martin, & Clubley, 2001). ASC are also linked to comorbid mood disorders. This study aimed to explore the relationships between each of these variables, along with individuals' social media use. The study also aimed to determine whether social media use mediates the relationship between AQ and depression/social anxiety. As social media can overcome communication barriers found in ASC, it is hoped that exploring this in terms of individuals' mental health will provide a foundation for future research to examine the potential of online mood interventions. Data was collected via an online survey, with 397 participants used in the analysis. Social media use had no relationship with social anxiety or depression. It did not mediate the relationship between AQ and the mood variables. The relationships between the other variables were examined, and regression models predicting the mood variables were fitted in R. Methods of collecting social media data, feedback from participants, and future directions for research are discussed in light of the findings.

Keywords: Social media, autistic traits, depression, social anxiety.

Acknowledgements

I would like to thank my supervisor, Dr Bonnie Auyeung, and co-supervisor Dr Mary E. Stewart of Heriot-Watt University, for all of their help and guidance throughout the dissertation process.

Table of Contents

Abstract.....	2
Acknowledgements.....	3
1. Introduction.....	5
Autistic traits in contemporary research	5
Social interaction and mental health	5
Mental health and ASC	6
Striving to be social	6
The beneficial role of social media.....	6
The present study	7
2. Method	9
Participants.....	9
Materials	9
Procedure	10
Analysis.....	11
3. Results.....	11
Descriptive Statistics.....	11
Research Questions 1 and 2	12
Research Question 3	14
4. Discussion.....	14
Conclusion	18
References.....	19
Appendix A.....	23
Appendix B	26
Appendix C	30
Appendix D.....	32
Appendix E	33
Appendix F	35
Appendix G.....	37
Appendix H.....	42
Appendix I	44
Appendix J	46
Appendix K.....	47

1. Introduction

Contemporary research on autism spectrum conditions (ASC) is moving away from the narrowly defined clinical terms of the past towards a broader autistic-trait perspective. This change in thinking is reflected in the increased use of scales such as the autism spectrum quotient (AQ) (Baron-Cohen et al., 2001). As research into ASC begins to take a wider perspective, co-morbid mood disorders also require exploration in relation to the broader autism phenotype.

Autistic traits in contemporary research

Although autism and related diagnoses have been typically considered developmental disorders, recent research has moved towards instead investigating the broader autism phenotype. The most recent *Diagnostic and Statistical Manual (DSM-V)* (American Psychiatric Association, 2013) reclassified autism and related diagnoses under the umbrella term “autism spectrum disorder”. Beyond the DSM-V classification, contemporary research is focusing on traits of autism that are manifest in the general population, rather than solely on individuals with a clinical level of these traits (Ruzich et al., 2015). In this paper, autism spectrum disorders will be referred to as “autism spectrum conditions” (ASC) to reflect growing resistance to labelling them “disorders”.

Social interaction and mental health

ASC are typically portrayed as difficulties with social interaction, with studies often focusing on improving communication through interventions (Spain & Blainey, 2015). An interest in social interaction is warranted, given how central it is to most peoples’ lives. How social interaction relates to depression and anxiety has also been studied extensively (Santini, Koyanagi, Tyrovolas, Mason, & Haro, 2015). Matthews et al. (2016) investigated the relationship between loneliness and depression, finding that while loneliness is strongly associated with the mood disorder, having a small social circle doesn’t necessarily imply depression. The authors found that loneliness and social isolation are related, but should not be considered the same construct. Golden et al. (2009) examined similar variables in their study on the integration of older individuals into their social groups. The concept of social support has also been demonstrated to have both a main and a buffering effect on health (both mental and physical) (Cohen & Wills, 1985). Each of these studies demonstrate how interpersonal relationships can have an impact on mental health.

Mental health and ASC

The research on mood disorders is not limited to their connections to social factors, however. Autism spectrum conditions have been widely linked with a high incidence of comorbid mood disorders (Pouw, Rieffe, Stockmann, & Gadow, 2013). A recent systematic review by Wigham, Barton, Parr and Rogers (2017) examined the prevalence of depression in ASC individuals, finding conflicting results. Comorbidity of depression ranged from 1% to 47% across studies. The review posits that this variation in prevalence is as a result of the small samples used in the reviewed studies. Epidemiological studies concerning the general population typically use much larger samples. The authors suggested that rates of comorbidity need to be interpreted cautiously, and that further studies should examine and consolidate findings on the phenomenology of depression in ASC individuals (Wigham et al., 2017). Anxiety is also reported to be highly co-morbid with ASC; since social and communication difficulties are a common feature in ASC, this anxiety often manifests specifically as social anxiety (Bellini, 2004). Diagnosing social anxiety can be difficult in individuals with ASC since there is so much overlap between the two conditions (Maddox & White, 2015). It could therefore be beneficial to widen the scope of social anxiety research and explore its relationship with autistic traits, rather than diagnosed ASC.

Striving to be social

Though links between ASC and mood disorders are well documented in the literature, it is important to keep in mind that many people with ASC do not feel negative affect as a result of being socially isolated. As Matthews et al. (2016) emphasise, the fact that someone has a small social group does not necessarily mean that they will be depressed. It is more likely for loneliness and depression to be present when someone with ASC feels the absence of close connections to be negative, and desires more social interaction (Mazurek, 2014). People with high AQ scores or a diagnosed ASC who strive for more social connectedness are likely to be at risk for depression and social anxiety (Mazurek, 2014). Whether or not individuals strive for social interaction, and how this relates to depression, is something which requires further investigation.

The beneficial role of social media

The increasing use of social media is providing opportunities for people with and without ASC to more easily make social connections. Shaw and Gant (2002) found in their study that using the internet decreased loneliness and depression in participants as they felt more connected to others. This study preceded most modern social media sites, therefore new

research has examined this further, in the context of contemporary social media. A more recent study by van Schalkwyk, Ortiz-Lopez, Volkmar and Silverman (2016) found that social media use has benefits for the friendship qualities of young people with diagnosed ASC. Gillisepe-Lynch, Kapp, Shane-Simpson, Smith and Hutman (2014) found that social media was more useful to people with diagnosed ASC than without. Comparing individuals with high and low AQ scores could clarify if this group difference emerges solely between those with and without a diagnosis, or if it is also evident between people with high versus low scores on the AQ.

Reasons listed by people with a diagnosed ASC as to why they liked social media included the asynchronous nature of communicating online. This allows them more time to formulate a response than in-person interactions (Gillespie-Lynch et al., 2014). Online communication can also reduce the need to understand gestures and facial expressions, a difficulty often found in ASC. When asked by Mazurek (2013), individuals with ASC commented that social media was a comfortable way to communicate. Social media sites have also enabled the development of ASC communities. In these fora, people feel more comfortable expressing themselves, make contact with people who share their experiences, and advocate for a greater understanding of neurodiversity outside the community (Davidson, 2008).

Social anxiety has been found to be lower when communicating online in general as people feel more comfortable (Yen et al., 2012). This reduction in anxiety may be more apparent in individuals with both high AQ scores and social anxiety. A reduction in anxiety attributable to social media would be of major benefit to individuals with high AQ scores. This is therefore an underlying aim of the present study, as exploring this relationship further could lead to greater understanding of how to harness social media for anxiety interventions.

The present study

Large amounts of research are available on ASC and mood, mood and interpersonal relationships, and relationships and the internet. There are few studies however on how all of these variables interact in people with different levels of autistic traits. As Wigham et al. (2017) suggested, examining at length the phenomenology of ASC-depression comorbidity could lead to greater understanding of how to develop more accurate diagnostic tools. The same is true of social anxiety. There is still, however, a lack of research on social factors and social media in conjunction with examining depression and social anxiety. The present study aims to explore all of these variables and their relationships in the context of the broader

autism phenotype, which will provide a foundation for future studies that wish to move away from the “disorder” view of ASC. A deeper understanding of autistic traits in the general population and how they relate to various social concepts would have direct implications on how mental health disorders in people with high and low levels of autistic traits are conceptualised.

This study aims bring together each of the areas discussed above, and explore them in a sample of individuals with differing levels of autistic traits. As social media provides an alternative form of communication, it could in turn be related to lower levels of depression or social anxiety amongst people with varying AQ scores. If this were to be found in the present study, it would have significant implications for improving the social experience of individuals with ASC. It is also expected that people with higher AQ scores could feel differently to people with lower AQ scores about social media. People with high AQ scores are expected to feel more positively towards social media than those with low scores, as it overcomes barriers to communication often experienced in ASC. This finding would support the utilisation of social media as a mental health intervention for individuals with a clinical level of autistic traits.

As yet, there is little research examining the links between AQ, social connectedness, and depression/social anxiety. Exploring these links further during this study could have practical applications, and aid the development of online social interventions to reduce risk of depression and social anxiety for individuals. Understanding how the AQ score relates to the other concepts would also help determine if interventions should be directed specifically at people who score highly in AQ, or in a more general manner to address loneliness and social anxiety irrespective of AQ score. For this reason, this study aims to address three research questions.

- 1) Does AQ, along with the measured social variables, predict depression and social anxiety?
- 2) Does social media use mediate the relationship between AQ and depression, and/or AQ and social anxiety?
- 3) Do people who score highly on the AQ feel more positive about social media than people with low AQ scores?

2. Method

Participants

Participants were 622 respondents to an online survey. 225 were excluded as they completed less than 80% of the survey, leaving 397 for analysis. Participants' age ranged from 18-75. There were 331 women, 62 men, and 4 non-binary.

Materials

Qualtrics (Qualtrics, 2017) was used as a survey building tool. R version 3.4.0 (R Core Team, 2017) was used to analyse the data. The survey included the following self report measures.

Autism Spectrum Quotient (AQ) (Baron-Cohen et al., 2001). The AQ (Appendix A) is a 50 item scale measuring autistic traits in adults of normal intellectual ability. Participants answer items on a 4-point Likert scale from “Strongly Disagree” to “Strongly Agree”. The AQ is not a diagnostic tool, but a means of quantifying autistic traits. The AQ was scored using a 4-point scale for this study, as opposed to the typical dichotomous scoring, increasing its sensitivity (Murray, Booth, McKenzie, & Kuenssberg, 2015). Total scores on the scale above 120 were considered indicative of the autism phenotype.

Beck Depression Inventory 2nd Edition (BDI-II) (Beck, Steer, & Brown, 1996). The BDI-II (Appendix B) is a 21 item measure of depression. It has high internal consistency (Dozois, Ahnberg, & Dobson, 1998), and has been shown to be valid in an ASC population (Cederlund, Hagberg, & Gillberg, 2010).

Liebowitz social anxiety scale self-report (LSAS) (Liebowitz, 1987). The LSAS (Appendix C) is a 24 item scale which assesses fear and avoidance of social situations. The participants rate each item on how much they fear them and how much they would avoid them using a 4-point Likert scale. The scale has high internal consistency (Heimberg et al., 1999).

Multidimensional scale of perceived social support (MSPSS) (Zimet, Dahlem, Zimet, & Farley, 1988). The MSPSS (Appendix D) has 12 items, and is rated on a 7-point Likert scale. Higher scores indicate greater levels of perceived social support from friends, family and significant others. The MSPSS has high internal consistency (Osman, Lamis, Freedenthal, Gutierrez, & McNaughton-Cassill, 2014).

Positive relations with others scale (Ryff, 1989). Positive relations with others (Appendix E) is a subscale of Ryff's "Psychological well-being" scale. This version has 14 items and high internal consistency, as does the parent scale of 20 items (Ryff & Keyes, 1995). The items are answered using a 6-point Likert scale. The scale is referred to as "RYFF" in this study.

Social self-efficacy (SSE) (Grieve, Witteveen, Tolan, & Jacobson, 2014). The SSE scale (Appendix F) is an 18 item questionnaire with high internal consistency (Grieve et al., 2014). It measures the confidence of participants in social situations, which they rate on a 5-point scale from "Not very confident" to "Very confident".

Social Media use. Few scales exist that measure social media use, so a novel questionnaire was developed for this study (Appendix G). Participants were asked to list each social media site of which they were a member. They then recalled one particular weekday and one weekend day, and estimated the amount of time spent on each of the social media sites for three discrete time periods (waking up to noon, noon to 6pm, and 6pm to bedtime). The time was aggregated and averaged across the two days. This variable is referred to as "TIME" in the analysis. Participants were also asked about their positivity towards social media as a tool for communicating with others.

Social adaptation of the strivings assessment scale (Emmons, 1986). The SSAS (Appendix H) was used to determine to what extent participants wanted to socialise. It is a 15 item questionnaire, with the majority of items rated on a 5-point Likert scale. Two items are rated on a scale of 0-90%.

UCLA Loneliness scale, Version 3 (Russell, 1996). The UCLA loneliness scale (Appendix I) is highly reliable, with studies indicating high internal consistency (Russell, 2010). It has 20 items, each beginning with "How do you feel...", on the topic of interpersonal relationships. The items are scored from 1 to 4, with some reverse scored. This variable is referred to as "UCLA" in the analysis.

Procedure

A survey was designed on Qualtrics (Qualtrics, 2017) using the measures listed above. The survey link was made available to potential participants through social media (Facebook, Twitter, LinkedIn), mailing lists, and the Cambridge Autism Research Centre (ARC) database. Participants were provided with information on the study and told how their data would be used. They were then made aware that it would be anonymised and that they

could withdraw at any stage, and asked to provide consent to their data being used for this study. Consent was required to begin the survey. Participants next created a unique ID code, to help the researcher ensure there were no duplicates. Each of the participants recruited via the ARC database provided their email address to link their responses back to their ARC data. Demographic information including previous diagnoses of ASC were gathered. The survey took participants an average of 25 minutes to complete, and Qualtrics saved progress to allow people to take breaks and return to the survey. Once data collection was finished the data were cleaned and the scale totals were calculated prior to analysis.

Analysis

Analysis of the data was carried out in the statistical software R (R Core Team, 2017). The data were cleaned and descriptive statistics were examined. The correlations between the variables were explored. Simple linear regressions between each predictor and outcome variable were modelled. Multiple regressions were then carried out to determine the model of best fit for the outcome variables. A chi square test of independence was also conducted.

3. Results

Descriptive Statistics

The data was imported into R Studio (R Core Team, 2017) and preliminary analyses were run. Age ranged from 18-75, the distribution of which is presented in Figure 1. In total, 397 participants were considered for analysis. 62 were men, 331 women, and 4 non-binary. The percentages of the sample that had a diagnosed ASC and that scored 120 or above on the AQ are presented in Table 1. More people scored above 120 (clinical cut-off) in the AQ than people who indicated they had a diagnosed ASC. Descriptive statistics for the other scales examined in the survey are included in Appendix J.

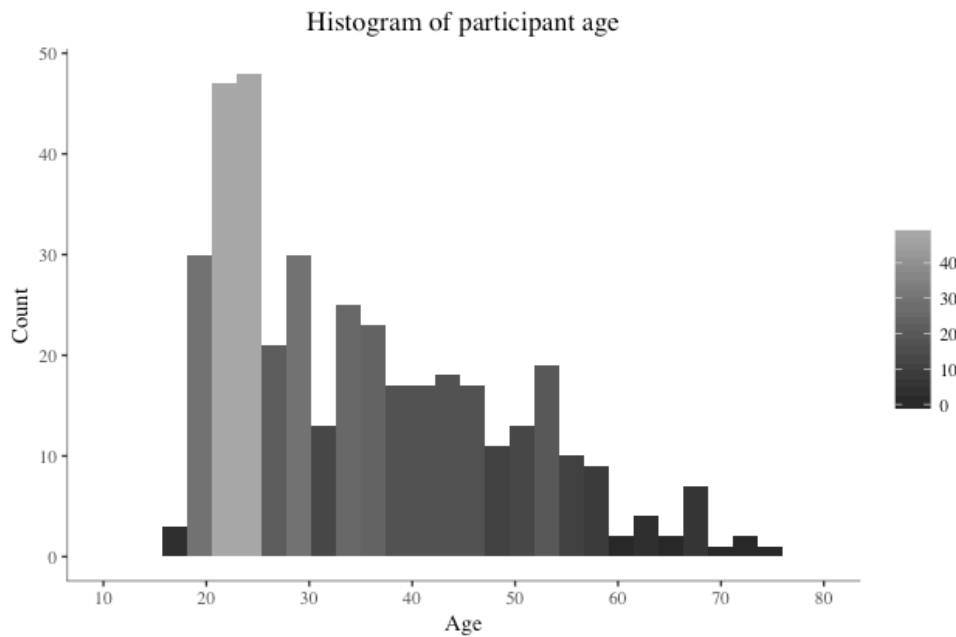


Figure 1: Histogram of participant age

Table 1

Percentages of sample with diagnosed ASC and with above cut-off AQ scores

	Men (N=62)	Women (N=331)	Other (N=4)	Total (N=397)
% with ASC	33.33	8.45	25	12.34
Diagnosis				
% with AQ	50	21.15	75	26.20
≥120				

Research Questions 1 and 2

The relationships between the variables were analysed in order to answer the first two research questions. The first step was to inspect the correlations between each of the variables. Since the scales in the survey measured constructs which have been found to be related in the past, it was not surprising that many of them were highly correlated. The correlation matrix of the variables can be found in Appendix K. The strongest relationship was between AQ and social self-efficacy, $r = -0.81$. Multicollinearity was tested when running regressions to ensure these correlations did not impact on the models.

The next step in addressing the research questions was to investigate the relationships between predictor and outcome variables using simple linear regressions. Time spent on social media (TIME) did not significantly predict BDI scores. This made conducting a

mediation analysis unnecessary – there was no relationship between social media use and BDI, therefore social media use did not mediate the strong relationship between AQ and BDI.

Significant predictors of BDI scores in the simple regressions were used to build a multiple linear regression model. All variables except TIME significantly predicted BDI on their own, and were combined into a multiple model. The variables that were no longer significant when included in this model were removed, and a final model was reached. Interestingly, AQ was not significant when included in a multiple model with the social factors. The main effects model (Table 2) of perceived social support (MSPSS), loneliness (UCLA), and positive relations with others (RYFF) predicting BDI score explained 41% of the variance of the model, $F(3,385) = 92.47, p < .001$, Adjusted $R^2 = 0.41$. 11 observations were excluded from the analysis due to missing data.

Table 2.

Model of best fit predicting BDI.

Predictor	b	SE (b)	t	Pr(> t)
MSPSS	-.15	.04	-4.30	<.001
UCLA	.51	.10	4.95	<.001
RYFF	-.33	.04	-8.68	<.001

The same method was followed to determine the relationship between the predictor variables and social anxiety. TIME did not significantly predict LSAS. This meant that social media use did not mediate the relationship between AQ and social anxiety. A multiple regression model was produced which best fit the data, following the same steps as the depression model (Table 3). AQ, SSE, UCLA, and RYFF significantly predicted social anxiety. Assumptions for the model were satisfied. Fifty-three percent of the variance in the model was accounted for by the predictor variables, $F(4,327) = 95.16, p < .001$, Adjusted $R^2 = 0.53$. 68 observations were excluded from this analysis due to missing data.

Table 3.

Model of best fit predicting LSAS.

Predictor	b	SE (b)	t	Pr(> t)
-----------	---	--------	---	----------

AQ	.36	.07	4.87	<.001
SSE	-.38	.10	-3.84	<.001
UCLA	.52	.25	2.05	.04
RYFF	-.42	.11	-3.81	<.001

Research Question 3

To test for differences between high and low AQ scorers on their attitude towards social media, a chi square test of independence was conducted. A significant effect was found $\chi^2(4) = 10.61, p < .05$. People with AQ scores of below 120 (Low) were more likely to feel positive about social media than those with AQ scores 120 and above (High) (Figure 2). This was interesting in that the direction was opposite to what was predicted, considering the literature.

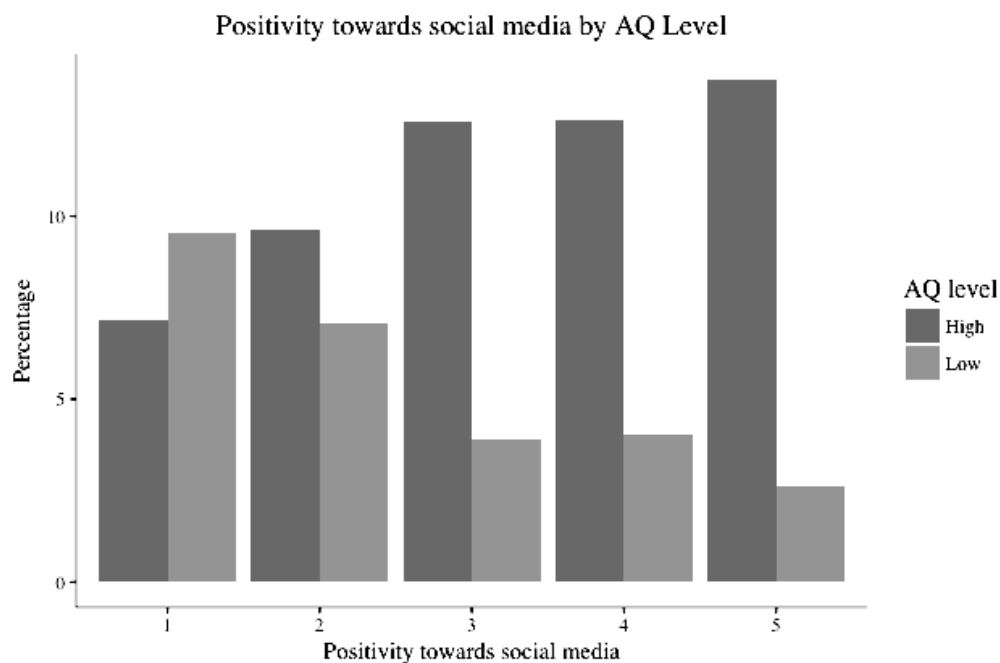


Figure 2: Positivity towards social media broken down by high and low AQ

4. Discussion

The main aim of this study was to establish the role that social media use plays in the relationship between AQ and both depression and social anxiety. Time spent on social media

did not significantly predict these variables. It was therefore concluded that it did not mediate the relationship between AQ and the outcome variables. The other social variables in the survey were strong predictors of both mood disorders. It was also found that people with AQ scores below 120 were more positive about social media than the higher-scoring participants. While this study was not without its limitations, it nonetheless has implications for further study into the broader autism phenotype, mood, and social media.

The first research question investigated if AQ, along with the other social variables, predicted depression and/or social anxiety. Depression was predicted by MSPSS, the UCLA loneliness scale, and the Positive relations with others scale. Interestingly, AQ was not a significant predictor in the multiple model. This would appear to contradict literature exploring the strong links between ASC and depression (Pouw et al., 2013). The systematic review by Wigham et al. (2017) did however emphasise that the link between depression and ASC should be interpreted cautiously. The authors of the review recommended that future research examine the phenomenology of those with high AQ and depression. The present study, in examining other factors along with depression and AQ scores, builds on this recommendation. Social factors were more important than participants' AQ scores in predicting depression. This may explain the wide variation between studies reviewed in Wigham et al. (2017) on the prevalence of depression. Some studies in the review may have been biased in how important a predictor they considered AQ, as they did not take the other social factors into account. Loneliness has been consistently shown to be a strong predictor of depression (Matthews et al., 2016), which this study supports. The same holds for perceived social support and positive relations with others (Cohen & Wills, 1985). The findings of this study have implications for developing an online intervention for depression. AQ was not a predictor, therefore any future intervention should focus instead on the social factors that link to depression, no matter the AQ score of the individual.

Social anxiety was predicted by AQ score, social self-efficacy, loneliness, and positive relations with others. Considering that communication difficulties can be central to both ASC and social anxiety, AQ is not a surprising predictor (Bellini, 2004). Loneliness and positive relations with others also have in the past been connected to social anxiety. Socially anxious adolescents are often excluded by their peers, and feel more lonely (La Greca & Lopez, 1998). While causality was not explored, the findings of this study tie in with that of La Greca and Lopez (1998) in uncovering a significant relationship between the variables. With regards to social self-efficacy, few studies have looked at the link between this and social anxiety. Having confidence in social situations is essentially the antithesis of social

anxiety, and so it is surprising that it has not been examined more frequently. However, the scale by Grieve and colleagues (2014) is relatively new, which may explain this lack of literature. This finding is therefore important, and future studies should consider the relationship in greater depth with a view to developing interventions. Increasing the social self-efficacy of high AQ individuals could potentially reduce their risk for social anxiety.

The final research question asked “Do people who score highly on the AQ feel more positive about social media than people with low AQ scores?”. The analysis indicated the opposite; people with lower AQ scores felt more positive towards social media than those scoring above 120. This was contrary to the pattern expected from previous literature, which found that people with ASC believed social media more useful than did people without a diagnosis (Gillespie-Lynch et al., 2014). This study looked at autistic traits rather than ASC, which may have contributed to this unexpected finding. There could potentially be a tangible difference between having the label of diagnosis and simply having a high AQ score which impacts on individuals’ experiences of social interaction. Confounding variables that were not measured may also have been partly responsible for this finding. ASC individuals are at a greater risk for bullying than typically developing adolescents, and in a study by Carrington et al. (2017) participants discussed experiences of cyberbullying. These negative online experiences may have a role in explaining the results of this study. Future studies should consider both negative and positive aspects of social media when exploring attitudes.

This study has laid the foundation for future research to examine in greater depth the complex relationships that were uncovered. In retrospect, there are also some modifications that should be considered if conducting a similar study. Firstly, the time commitment required of participants to complete the survey might have contributed to the high rate of incomplete responses. The strivings scale was not a significant predictor in any model, and could be removed to shorten the survey in future. Secondly, the user interface also requires re-thinking, particularly for the social anxiety scale. 68 cases were excluded from the LSAS regression model due to missing data. Upon investigation, the way the scale displayed on participants’ screens likely influenced this, as on a smartphone the second half of the scale was not visible on the screen without scrolling.

Perhaps the most influential improvement that could be made however is the method used to collect data on social media use. Media researchers have long focused on the problem of measuring time spent on various forms of media (De Vreese & Neijens, 2016). Self-report global measures, as used in this study, have been widely used due to their cost-effectiveness. However, they have been found to be unreliable as participants inaccurately estimate their

time spent on social media (De Vreese & Neijens, 2016). Other methods such as direct observation, while more reliable, are much more difficult and costly to implement (De Vreese & Neijens, 2016). Some efforts were made to improve the reliability of measurement in this study, with the time spent on social media broken down by both the specific social networking site and day of the week. These days were then divided into discrete sections, in an attempt to make it easier for participants to recall their social media use. Technology for direct observation is becoming more readily available and cost-effective however, and employing these methods would improve measurement accuracy (De Vreese & Neijens, 2016). This in turn would determine more definitively whether time spent online actually mediates the link between AQ and depression/social anxiety.

An interesting aspect of the study was feedback received from participants. Participants were provided with the researcher's contact details after completing the study, and their feedback helped to distinguish areas of the study in which improvements could be made. One individual with an ASC commented that the study seemed biased against ASC experiences. They felt that there was an underlying assumption in the survey that having many social connections was the 'correct' way of living. This was certainly not the intention of the study, and the feedback prompted extensive reflection. The neurodiversity movement, which considers conditions, including ASC, to be part of normal variation in the human genome, is gaining traction online. It is through feedback on studies such as this that researchers can incorporate this movement respectfully into their work. In light of the feedback received, there appears to be a need to examine how accurately the administered scales actually capture experiences of people with ASC. This would be a complex task, considering the heterogeneous group in question, however, it would deepen our understanding of how individuals experience social interactions on and offline. Chown et al. (2017) presented a framework for making research into autism more inclusive of people with ASC. Informing research through involving people with ASC would ensure that the findings reflect their experiences and benefit them in some tangible way.

A large amount of qualitative data was collected for the present study, but was not analysed due to time constraints. Preliminary reading of this data would seem to suggest that social media does have a positive impact on peoples' lives, and analysing this data would be an inclusive way of investigating how people feel about social media. This in turn could inform future online interventions for individuals who may benefit from more social connectedness.

Conclusion

This study aimed to explore the relationships between autistic traits, social media use, and mood, alongside other social variables. While there was no significant relationship between individuals' social media use and either their depression or anxiety, it was found that loneliness, social self-efficacy, AQ and positive relations with others predicted social anxiety scores. Loneliness, perceived social support, and positive relations with others predicted depression scores. A group difference between high and low AQ was also found on how positively they viewed social media. More inclusive research is required on these complex relationships, to fully understand the extent of their impact.

References

- American Psychiatric Association, D. S. M. T. F. (2013). *Diagnostic and statistical manual of mental disorders : DSM-5* (Fifth edition.. ed.): Arlington, VA : American Psychiatric Association.
- Baron-Cohen, S., Wheelwright, S., Skinner, R., Martin, J., & Clubley, E. (2001). The autism-spectrum quotient (AQ): Evidence from Asperger Syndrome/high-functioning autism, males and females, scientists and mathematicians (vol 31, pg 5, 2001). *J. Autism Dev. Disord.*, 31(6), 603-603.
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). Beck depression inventory-II. *San Antonio*, 78(2), 490-498.
- Bellini, S. (2004). Social Skill Deficits and Anxiety in High- Functioning Adolescents with Autism Spectrum Disorders. *Focus on Autism and Other Developmental Disabilities*, 19(2), 78-86.
- Carrington, S., Campbell, M., Saggars, B., Ashburner, J., Vicig, F., Dillon-Wallace, J., & Hwang, Y. S. (2017). Recommendations of school students with autism spectrum disorder and their parents in regard to bullying and cyberbullying prevention and intervention. *International Journal of Inclusive Education*, 1-20.
doi:10.1080/13603116.2017.1331381
- Cederlund, M., Hagberg, B., & Gillberg, C. (2010). Asperger syndrome in adolescent and young adult males. Interview, self - and parent assessment of social, emotional, and cognitive problems. *Research in Developmental Disabilities*, 31(2), 287-298.
doi:10.1016/j.ridd.2009.09.006
- Chown, N., Robinson, J., Beardon, L., Downing, J., Hughes, L., Leatherland, J., . . . Macgregor, D. (2017). Improving research about us, with us: a draft framework for inclusive autism research. *Disability & Society*, 32(5), 1-15.
doi:10.1080/09687599.2017.1320273
- Cohen, S., & Wills, T. A. (1985). Stress, Social Support, and the Buffering Hypothesis. *Psychological Bulletin*, 98(2), 310-357. doi:10.1037/0033-2909.98.2.310
- Davidson, J. (2008). Autistic culture online: virtual communication and cultural expression on the spectrum. *Social and cultural geography*, 9(7), 791-806.
doi:10.1080/14649360802382586

- De Vreese, C. H., & Neijens, P. (2016). Measuring Media Exposure in a Changing Communications Environment. *Communication Methods and Measures*, 10(2-3), 69-80. doi:10.1080/19312458.2016.1150441
- Dozois, D. J. A., Ahnberg, J. L., & Dobson, K. S. (1998). Psychometric Evaluation of the Beck Depression Inventory- II. *Psychological Assessment*, 10(2), 83-89. doi:10.1037/1040-3590.10.2.83
- Emmons, R. A. (1986). Personal Strivings: An Approach to Personality and Subjective Well-Being. *Journal of Personality and Social Psychology*, 51(5), 1058-1068. doi:10.1037/0022-3514.51.5.1058
- Gillespie-Lynch, K., Kapp, S. K., Shane-Simpson, C., Smith, D. S., & Hutman, T. (2014). Intersections between the Autism Spectrum and the Internet: Perceived Benefits and Preferred Functions of Computer-Mediated Communication. *Intellectual and Developmental Disabilities*, 52(6), 456-469. doi:10.1352/1934-9556-52.6.456
- Golden, J., Conroy, R. M., Bruce, I., Denihan, A., Greene, E., Kirby, M., & Lawlor, B. A. (2009). Loneliness, social support networks, mood and wellbeing in community-dwelling elderly. *International Journal of Geriatric Psychiatry*, 24(7), 694-700. doi:10.1002/gps.2181
- Grieve, R., Witteveen, K., Tolan, G. A., & Jacobson, B. (2014). Development and validation of a measure of cognitive and behavioural social self- efficacy. *Personality and Individual Differences*, 59, 71-76. doi:10.1016/j.paid.2013.11.008
- Heimberg, R. G., Horner, K. J., Juster, H. R., Safren, S. A., Brown, E. J., Schneier, F. R., & Liebowitz, M. R. (1999). Psychometric properties of the Liebowitz Social Anxiety Scale. *Psychol. Med.*, 29(1), 199-212.
- La Greca, A., & Lopez, N. (1998). Social Anxiety Among Adolescents: Linkages with Peer Relations and Friendships. *An official publication of the International Society for Research in Child and Adolescent Psychopathology*, 26(2), 83-94. doi:10.1023/A:1022684520514
- Liebowitz, M. R. (1987). Social phobia. *Modern Problems of Pharmacopsychiatry*, 22, 141-173.
- Maddox, B. B., & White, S. W. (2015). Comorbid Social Anxiety Disorder in Adults with Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*, 45(12), 3949-3960. doi:10.1007/s10803-015-2531-5

- Matthews, T., Danese, A., Wertz, J., Odgers, C., Ambler, A., Moffitt, T., & Arseneault, L. (2016). Social isolation, loneliness and depression in young adulthood: a behavioural genetic analysis. *Soc Psychiatry Psychiatr Epidemiol*, 51(3), 339-348. doi:10.1007/s00127-016-1178-7
- Mazurek, M. O. (2013). Social media use among adults with autism spectrum disorders. *Computers in Human Behavior*, 29(4), 1709.
- Mazurek, M. O. (2014). Loneliness, friendship, and well-being in adults with autism spectrum disorders. *Autism*, 18(3), 223-232. doi:10.1177/1362361312474121
- Murray, A. L., Booth, T., McKenzie, K., & Kuenssberg, R. (2015). What Range of Trait Levels Can the Autism-Spectrum Quotient (AQ) Measure Reliably? An Item Response Theory Analysis. *Psychological Assessment*. doi:10.1037/pas0000215
- Osman, A., Lamis, D., Freedenthal, S., Gutierrez, P., & McNaughton-Cassill, M. (2014). The Multidimensional Scale of Perceived Social Support: Analyses of Internal Reliability, Measurement Invariance, and Correlates Across Gender. *Journal of Personality Assessment*, 96(1), 103-112. doi:10.1080/00223891.2013.838170
- Pouw, L. B. C., Rieffe, C., Stockmann, L., & Gadow, K. D. (2013). The Link between Emotion Regulation, Social Functioning, and Depression in Boys with ASD. *Research in Autism Spectrum Disorders*, 7(4), 549-556. doi:10.1016/j.rasd.2013.01.002
- Qualtrics. (2017). Qualtrics (Version June 2017). Utah, USA. Retrieved from <http://www.qualtrics.com/>
- R Core Team. (2017). R: A language and environment for statistical computing (Version 3.4.0). Vienna, Austria: R Foundation for Statistical Computing. Retrieved from <http://www.r-project.org/>.
- Ruzich, E., Allison, C., Smith, P., Watson, P., Auyeung, B., Ring, H., & Baron-Cohen, S. (2015). Measuring autistic traits in the general population: a systematic review of the Autism-Spectrum Quotient (AQ) in a nonclinical population sample of 6,900 typical adult males and females. In *Mol. Autism* (Vol. 6).
- Ryff, C. D. (1989). Happiness Is Everything, or Is It? Explorations on the Meaning of Psychological Well-Being. *Journal of Personality and Social Psychology*, 57(6), 1069-1081. doi:10.1037/0022-3514.57.6.1069

- Ryff, C. D., & Keyes, C. L. M. (1995). The Structure of Psychological Well-Being Revisited. *Journal of Personality and Social Psychology*, 69(4), 719-727. doi:10.1037/0022-3514.69.4.719
- Santini, Z. I., Koyanagi, A., Tyrovolas, S., Mason, C., & Haro, J. M. (2015). The association between social relationships and depression: A systematic review. *Journal of Affective Disorders*, 175, 53-65. doi:10.1016/j.jad.2014.12.049
- Shaw, L. H., & Gant, L. M. (2002). In Defense of the Internet: The Relationship between Internet Communication and Depression, Loneliness, Self-Esteem, and Perceived Social Support. *CyberPsychology & Behavior*, 5(2), 157-171. doi:10.1089/109493102753770552
- Spain, D., & Blainey, S. H. (2015). Group Social Skills Interventions for Adults with High-Functioning Autism Spectrum Disorders: A Systematic Review. *Autism: The International Journal of Research and Practice*, 19(7), 874-886. doi:10.1177/1362361315587659
- van Schalkwyk, G. I., Ortiz-Lopez, M., Volkmar, F. R., & Silverman, W. K. (2016). 1.2 SOCIAL MEDIA USE IMPROVES FRIENDSHIP QUALITY IN ADOLESCENTS WITH AUTISM SPECTRUM DISORDER. In (Vol. 55, pp. S100-S100).
- Wigham, S., Barton, S., Parr, J. R., & Rodgers, J. (2017). A Systematic Review of the Rates of Depression in Children and Adults With High-Functioning Autism Spectrum Disorder. In (Vol. 10, pp. 267-287): Routledge.
- Yen, J.-Y., Yen, C.-F., Chen, C.-S., Wang, P.-W., Chang, Y.-H., & Ko, C.-H. (2012). Social anxiety in online and real- life interaction and their associated factors. *Cyberpsychology, behavior and social networking*, 15(1), 7. doi:10.1089/cyber.2011.0015
- Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment*, 52(1), 30-41. doi:10.1207/s15327752jpa5201_2

Appendix A
The Adult Autism Spectrum Quotient (AQ)

	Definitely Agree	Slightly Agree	Slightly Disagree	Definitely Disagree
I prefer to do things with others rather than on my own.				
I prefer to do things the same way over and over again.				
If I try to imagine something, I find it very easy to create a picture in my mind.				
I frequently get so strongly absorbed in one thing that I lose sight of other things.				
I often notice small sounds when others do not.				
I usually notice car number plates or similar strings of information.				
Other people frequently tell me that what I've said is impolite, even though I think it is polite.				
When I'm reading a story, I can easily imagine what the characters might look like.				
I am fascinated by dates.				
In a social group, I can easily keep track of several different people's conversations.				
I find social situations easy.				
I tend to notice details that others do not.				
I would rather go to a library than a party.				
I find making up stories easy.				
I find myself drawn more strongly to people than to things.				

I tend to have very strong interests which I get upset about if I can't pursue.				
I enjoy social chit-chat.				
When I talk, it isn't always easy for others to get a word in edgeways.				
I am fascinated by numbers.				
When I'm reading a story, I find it difficult to work out the characters' intentions.				
I don't particularly enjoy reading fiction.				
I find it hard to make new friends.				
I notice patterns in things all the time.				
I would rather go to the theatre than a museum.				
It does not upset me if my daily routine is disturbed.				
I frequently find that I don't know how to keep a conversation going.				
I find it easy to "read between the lines" when someone is talking to me.				
I usually concentrate more on the whole picture, rather than the small details.				
I am not very good at remembering phone numbers.				
I don't usually notice small changes in a situation, or a person's appearance.				
I know how to tell if someone listening to me is getting bored.				
I find it easy to do more than one thing at once.				
When I talk on the phone, I'm not sure when it's my turn to speak.				
I enjoy doing things spontaneously.				

I am often the last to understand the point of a joke.				
I find it easy to work out what someone is thinking or feeling just by looking at their face.				
If there is an interruption, I can switch back to what I was doing very quickly.				
I am good at social chit-chat.				
People often tell me that I keep going on and on about the same thing.				
When I was young, I used to enjoy playing games involving pretending with other children.				
I like to collect information about categories of things (e.g. types of car, types of bird, types of train, types of plant, etc.).				
I find it difficult to imagine what it would be like to be someone else.				
I like to plan any activities I participate in carefully.				
I enjoy social occasions.				
I find it difficult to work out people's intentions.				
New situations make me anxious.				
I enjoy meeting new people.				
I am a good diplomat.				
I am not very good at remembering people's date of birth.				
I find it very easy to play games with children that involve pretending.				

Appendix B

Beck Depression Inventory II

Sadness	<p>0 – I do not feel sad.</p> <p>1 – I feel sad much of the time.</p> <p>2 – I feel sad all the time.</p> <p>3 – I am so sad or unhappy that I can't stand it.</p>
Pessimism	<p>0 – I am not discouraged about my future.</p> <p>1 – I feel more discouraged about my future than I used to be.</p> <p>2 – I do not expect things to work out for me.</p> <p>3 – I feel my future is hopeless and will only get worse.</p>
Past Failure	<p>0 – I do not feel like a failure.</p> <p>1 – I have failed more than I should have.</p> <p>2 – As I look back, I see a lot of failures.</p> <p>3 – I feel I am a total failure as a person.</p>
Loss of Pleasure	<p>0 – I get as much pleasure as I ever did from the things I enjoy.</p> <p>1 – I don't enjoy things as much as I used to.</p> <p>2 – I get very little pleasure from the things I used to enjoy.</p> <p>3 – I can't get any pleasure from the things I used to enjoy.</p>
Guilty Feelings	<p>0 – I don't feel particularly guilty.</p> <p>1 – I feel guilty over many things I have done or should have done.</p> <p>2 – I feel quite guilty most of the time.</p> <p>3 – I feel guilty all of the time.</p>
Punishment Feelings	<p>0 – I don't feel I am being punished.</p> <p>1 – I feel I may be punished.</p> <p>2 – I expect to be punished.</p> <p>3 – I feel I am being punished.</p>
Self-Dislike	<p>0 – I feel the same about myself as ever.</p> <p>1 – I have lost confidence in myself.</p> <p>2 – I am disappointed in myself.</p> <p>3 – I dislike myself.</p>

Self-Criticalness	<p>0 – I don't criticise or blame myself more than usual.</p> <p>1 – I am more critical of myself than I used to be.</p> <p>2 – I criticise myself for all of my faults.</p> <p>3 – I blame myself for everything bad that happens.</p>
Suicidal Thoughts or Wishes	<p>0 – I don't have any thoughts of killing myself.</p> <p>1 – I have thoughts of killing myself, but I would not carry them out.</p> <p>2 – I would like to kill myself.</p> <p>3 – I would kill myself if I had the chance.</p>
Crying	<p>0 – I don't cry any more than I used to.</p> <p>1 – I cry more than I used to.</p> <p>2 – I cry over every little thing.</p> <p>3 – I feel like crying, but I can't.</p>
Agitation	<p>0 – I am no more restless or wound up than usual.</p> <p>1 – I feel more restless or wound up than usual.</p> <p>2 – I am so restless or agitated that it's hard to stay still.</p> <p>3 – I am so restless or agitated that I have to keep moving or doing something.</p>
Loss of Interest	<p>0 – I have not lost interest in other people or activities.</p> <p>1 – I am less interested in other people or things than before.</p> <p>2 – I have lost most of my interest in other people or things.</p> <p>3 – It's hard to get interested in anything.</p>
Indecisiveness	<p>0 – I make decisions about as well as ever.</p> <p>1 – I find it more difficult to make decisions than usual.</p> <p>2 – I have much greater difficulty in making decisions than I used to.</p> <p>3 – I have trouble making any decisions.</p>
Worthlessness	<p>0 – I do not feel I am worthless.</p> <p>1 – I don't consider myself as worthwhile and useful as I used to.</p> <p>2 – I feel more worthless as compared to other people.</p> <p>3 – I feel utterly worthless.</p>
Loss of Energy	<p>0 – I have as much energy as ever.</p>

	<p>1 – I have less energy than I used to have.</p> <p>2 – I don't have enough energy to do very much.</p> <p>3 – I don't have enough energy to do anything.</p>
Changes in Sleeping Pattern	<p>0 – I have not experienced any change in my sleeping pattern.</p> <p>1a – I sleep somewhat more than usual.</p> <p>1b – I sleep somewhat less than usual.</p> <p>2a – I sleep a lot more than usual.</p> <p>2b – I sleep a lot less than usual.</p> <p>3a – I sleep most of the day.</p> <p>3b – I wake up 1-2 hours early and can't get back to sleep.</p>
Irritability	<p>0 – I am no more irritable than usual.</p> <p>1 – I am more irritable than usual.</p> <p>2 – I am much more irritable than usual.</p> <p>3 – I am irritable all the time.</p>
Changes in Appetite	<p>0 – I have not experienced any change in my appetite.</p> <p>1a – My appetite is somewhat less than usual.</p> <p>1b – My appetite is somewhat greater than usual.</p> <p>2a – My appetite is much less than before.</p> <p>2b – My appetite is much greater than usual.</p> <p>3a – I have no appetite at all.</p> <p>3b – I crave food all the time.</p>
Concentration Difficulty	<p>0 – I can concentrate as well as ever.</p> <p>1 – I can't concentrate as well as usual.</p> <p>2 – It's hard to keep my mind on anything for very long.</p> <p>3 – I find I can't concentrate on anything.</p>
Tiredness or Fatigue	<p>0 – I am no more tired or fatigued than usual.</p> <p>1 – I get more tired or fatigued more easily than usual.</p> <p>2 – I am too tired or fatigued to do a lot of the things I used to do.</p> <p>3 – I am too tired or fatigued to do most of the things I used to do.</p>
Loss of Interest in Sex	<p>0 – I have not noticed any recent change in my interest in sex.</p> <p>1 – I am less interested in sex than I used to be.</p>

	2 – I am much less interested in sex now. 3 – I have lost interest in sex completely.
--	--

Appendix C

Liebowitz social anxiety scale

	Fear: 0-None 1-Mild 2-Moderate 3-Severe	Avoidance: 0-Never 1-Occasionally 2-Often 3-Usually
Using a telephone in public		
Participating in a small group activity		
Eating in public		
Drinking with others		
Talking to someone in authority		
Acting, performing, or speaking in front of an audience		
Going to a party		
Working while being observed		
Writing while being observed		
Calling someone you don't know very well		
Talking face to face with someone you don't know very well		
Meeting strangers		
Urinating in a public bathroom		
Entering a room when others are already seated		
Being the centre of attention		
Speaking up at a meeting		
Taking a test of your ability, skill, or knowledge		
Expressing disagreement or disapproval to someone you don't know very well		
Looking someone who you don't know very well straight in the eyes		
Giving a prepared oral talk to a group		

Trying to make someone's acquaintance for the purpose of a romantic/sexual relationship		
Returning goods to a store for a refund		
Giving a party		
Resisting a high pressure sales person		

Appendix D

Multidimensional Scale of Perceived Social Support

	1- Very strongly disagree 2- Strongly disagree 3- Mildly disagree 4- Neutral 5- Mildly agree 6- Strongly agree 7- Very strongly agree
There is a special person who is around when I am in need.	
There is a special person with whom I can share joys and sorrows.	
My family really tries to help me.	
I get the emotional help & support I need from my family.	
I have a special person who is a real source of comfort to me.	
My friends really try to help me.	
I can count on my friends when things go wrong.	
I can talk about my problems with my family.	
I have friends with whom I can share my joys and sorrows.	
There is a special person in my life who cares about my feelings.	
My family is willing to help me make decisions.	
I can talk about my problems with my friends	

Appendix E

Positive relations with others subscale

	Strongly Disagree	Disagree Somewhat	Slightly Disagree	Agree Slightly	Agree Somewhat	Strongly Agree
Most people see me as loving and affectionate.						
Maintaining close relationships has been difficult and frustrating for me						
I often feel lonely because I have few close friends with whom to share my concerns.						
I enjoy personal and mutual conversations with family members or friends.						
It is important to me to be a good listener when close friends talk to me about their problems.						
I don't have many people who want to listen when I need to talk.						
I feel like I get a lot out of my friendships.						

It seems to me that most other people have more friends than I do.						
People would describe me as a giving person, willing to share my time with others.						
I have not experienced many warm and trusting relationships with others.						
I often feel like I'm on the outside looking in when it comes to friendships.						
I know that I can trust my friends, and they know they can trust me.						
I find it difficult to really open up when I talk with others.						
My friends and I sympathize with each other's problems.						

Appendix F
Social Self Efficacy

	1 = Not at all confident	2	3	4	5 = Very confident
Predict other people's behaviour					
Understand others' choices					
Know how my actions will make others feel					
Feel comfortable around new people who I don't know					
Anticipate the things people do					
Understand other peoples' feelings					
Fit in easily in social situations					
Understand why people might become angry with me					
Understand others' wishes					
Enter new situations and meeting people for the first time					
Be able to say what I think without people becoming angry or irritated					
Get along with other people					
Find people predictable					
Understand what others are trying to accomplish without the need for them saying anything					

	1 = Not at all confident	2	3	4	5 = Very confident
Get to know others well					
Realise when I have hurt others					
Predict how others will react to my behaviour					
Get on good terms with new people					
Understand what others really mean through their expression, their body language etc.					
Find good conversation topics					
Anticipate others' reactions to what I do					

Instagram													
WhatsApp													
Snapchat													
Twitter													
Tumblr													
Reddit													
Wrong Planet													
Other													

6. Choose one day from the past **WEEKEND**. On this day, how much time (in minutes) did you spend on the following social networking sites **from when you woke in the morning to 12 noon?**

	0	10	20	30	40	50	60	70	80	90	100	110	120
Facebook													
Facebook Messenger													
Instagram													
WhatsApp													
Snapchat													
Twitter													
Tumblr													
Reddit													
Wrong Planet													
Other													

7. Choose one day from the past **WEEKEND**. On this day, how much time (in minutes) did you spend on the following social networking sites **from 12 noon to 6pm?**

9. How positive do you feel about interacting with others on social media?
- a. Extremely positive
 - b. Somewhat positive
 - c. Neither positive nor negative
 - d. Somewhat negative
 - e. Extremely negative

Appendix H

Social Adaptation of the Strivings Assessment Scale

How much joy or happiness do you feel when you have a successful social encounter?	1 – Very Unhappy		2		3		4		5 – Very Happy	
How much sorrow or sadness do you feel when you have an unsuccessful social encounter?	1 – Very Happy		2		3		4		5 – Very Unhappy	
How unhappy are you when you interact socially?	1 – Very Unhappy		2		3		4		5 – Very Happy	
How committed are you to being socially successful?	1 – Not at all committed		2		3		4		5 – Very committed	
How important is it for you to be socially successful?	1 – Not at all important		2		3		4		5 – Very important	
How much effort and energy do you generally expend in trying to succeed socially?	1 – Not much effort at all		2		3		4		5 – A lot of effort	
How difficult is it for you to succeed socially?	1 – Very difficult		2		3		4		5 – Not difficult at all	
Does your social success depend more on internal or external factors?	1 – Only external factors		2		3 – Equal amounts		4		5 – Only internal factors	
How socially desirable do you think it is to strive for social success?	1 – Not very desirable		2		3		4		5 – Very desirable	
How clear an idea do you have of what you need to do to be socially successful?	1 – Not very clear at all		2		3		4		5 – Very clear	
How much do you feel striving for social success affects other goals you would like to achieve?	1 – Not at all		2		3		4		5 – A lot	
In the future, how likely is it that you will be socially successful?	0% chance	10	20	30	40	50	60	70	80	90% chance

How confident do you feel about the probability estimation?	1 – Not confident at all		2		3		4		5 – Very confident	
How likely is it that you will be socially successful if you do not try?	0% chance	10	20	30	40	50	60	70	80	90% chance
How much do you feel social success impacts your life?	1 – It has no impact		2		3		4		5 – It has a big impact	

Appendix I
UCLA Loneliness Scale

	Never	Rarely	Sometimes	Always
How often do you feel that you are “in tune” with the people around you?				
How often do you feel that you lack companionship?				
How often do you feel that there is no one you can turn to?				
How often do you feel alone?				
How often do you feel part of a group of friends?				
How often do you feel that you have a lot in common with the people around you?				
How often do you feel that you are no longer close to anyone?				
How often do you feel that your interests and ideas are not shared by those around you?				
How often do you feel outgoing and friendly?				
How often do you feel close to people?				
How often do you feel left out?				
How often do you feel that your relationships with others are not meaningful?				
How often do you feel that no one really knows you well?				
How often do you feel isolated from others?				
How often do you feel you can find companionship when you want it?				

	Never	Rarely	Sometimes	Always
How often do you feel that there are people who really understand you?				
How often do you feel shy?				
How often do you feel that people are around you but not with you?				
How often do you feel that there are people you can talk to?				
How often do you feel that there are people you can turn to?				

Appendix J

Descriptive statistics.

Descriptive statistics for scales included in the survey

Scale	n	Min	Max	Range	Mean	SD	N above clin. cut-off*
BDI	396	0	56	56	14.87	11.18	50
LSAS	332	3	134	131	48.55	28.77	102
MSPSS	393	12	84	72	62.81	15.5	
RYFF	396	19	84	65	58.98	14.66	
SSE	397	20	105	85	72.26	18.88	
TIME	397	0	1109.5	1109.5	253.27	225.5	
SSAS	355	23	76	53	52.79	9.91	
UCLA	397	36	67	31	54.57	4.26	

*(If applicable)

Appendix K
Correlation matrix

Correlation matrix of variables

	MSPSS	AQ	LSAS	BDI	SSE	UCLA	SSAS	RYFF	TIME
MSPSS	1.00	-0.52	-0.42	-0.56	0.55	-0.12	0.45	0.70	0.09
AQ	-0.52	1.00	0.69	0.45	-0.81	0.05	-0.59	-0.71	-0.13
LSAS	-0.42	0.69	1.00	0.56	-0.65	0.12	-0.49	-0.64	-0.08
BDI	-0.56	0.45	0.56	1.00	-0.46	0.26	-0.37	-0.62	0.08
SSE	0.55	-0.81	-0.65	-0.46	1.00	-0.01	0.59	0.71	0.13
UCLA	-0.12	0.05	0.12	0.26	-0.01	1.00	-0.01	-0.12	0.16
SSAS	0.45	-0.59	-0.49	-0.37	0.59	-0.01	1.00	0.60	0.16
RYFF	0.70	-0.71	-0.64	-0.62	0.71	-0.12	0.60	1.00	0.05
TIME	0.09	-0.13	-0.08	0.08	0.13	0.16	0.16	0.05	1.00